

REMARKS

In the last Office Action, the Examiner withdrew claims 12-24, 31 and 32 from further consideration as being directed to a non-elected invention. The drawings were objected to under 37 C.F.R. §1.84(p)(5) because they do not show reference numeral 2 described in the specification and because they include reference numeral 110 which is not described in the specification. The drawings were further objected to under 37 C.F.R. §1.83(a) as not showing the gasket contacting a surface of the negative electrode as recited in claim 25. The specification was objected to because it does not define "PPS" on page 25 and because it does not provide antecedent basis for the subject matter recited in claim 25. Claims 1-11 and 25-30 were rejected under 35 U.S.C. §112, second paragraph, for indefiniteness. Claims 1-11 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Nos. 6,274,277 to Mori et al. ("Mori"), 6,489,062 to Watanabe et al. ("Watanabe '062"), and US 2002/0068221 A1 to Watanabe et al. ("Watanabe '221"). Claims 25, 26 and 28 were rejected under 35 U.S.C. §102(b) as being clearly anticipated by U.S. Patent No. 5,360,685 to Tanaka. Claims 25-29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe '062 in view of Tanaka.

In accordance with the present response, the specification has been suitably revised to correct informalities and to overcome the objections to the specification and drawings relating to reference numerals 2 and 110 noted by the Examiner. The title of the invention has been changed to "METHOD OF PRODUCING NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY AND METHOD OF MOUNTING NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY ON A CIRCUIT SUBSTRATE" to more clearly reflect the invention to which the amended and new claims are directed. A new, more descriptive abstract has been substituted for the original abstract.

Original independent claims 1 and 4 have been amended to further patentably distinguish from the prior art of record. Original claims 1-11 have also been amended to overcome the rejection under 35 U.S.C. §112, second paragraph, bring them into better conformance with U.S. practice, and in formal respects to improve the wording thereof. Claims 25-30 have been canceled without prejudice or admission, thereby rendering the objection to the drawings under 35 U.S.C. §1.83(a) and the rejection of these claims under 35 U.S.C. §112, second paragraph, moot. Non-elected claims 12-24, 31 and 32 have been canceled without prejudice or admission and subject to applicants' right to file a continuing application to pursue the subject matter of the

non-elected claims. New claims 33-40 have been added to provide a fuller scope of coverage.

In view of the foregoing, applicants respectfully submit that the objection to the specification, objection to the drawings under 37 C.F.R. §1.84(p)(5), and the rejection of claims 1-11 under 35 U.S.C. §112, second paragraph, have been overcome and should be withdrawn.

Applicants respectfully request reconsideration of their application in light of the following discussion.

Brief Summary of the Invention

The present invention is directed to a method of producing a non-aqueous electrolyte secondary battery and to a method of mounting the non-aqueous electrolyte secondary battery on a circuit substrate.

As described in the specification, conventional methods of producing non-aqueous electrolyte secondary batteries have not been able to effectively screen abnormalities in the batteries which are caused, for example, by an increase in quantities of foreign matter (e.g., moisture) in the batteries.

The present invention overcomes the drawbacks of the conventional art. According to the present invention, amended independent claim 1 is directed to a method of producing a non-aqueous electrolyte secondary battery. A positive

electrode, a negative electrode, an electrolytic solution containing a non-aqueous solvent and a supporting salt, a separator and a gasket are assembled and sealed together to form a non-aqueous electrolyte secondary battery. The non-aqueous electrolyte secondary battery is then heated and screened for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises.

In another aspect, amended independent claim 4 is directed to a method of mounting a non-aqueous electrolyte secondary battery on a circuit substrate. A positive electrode, a negative electrode, a non-aqueous solvent, an electrolytic solution, a separator and a gasket are assembled and sealed together to form a non-aqueous electrolyte secondary battery. The non-aqueous electrolyte secondary battery is then heated and screened for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises during the heating step. The non-aqueous electrolyte secondary battery is then mounted on a circuit substrate by reflow soldering.

By the foregoing methods, abnormalities in the non-aqueous electrolyte secondary battery can be efficiently detected by screening the non-aqueous electrolyte secondary battery as the heating temperature of the non-aqueous electrolyte secondary battery rises rather than in low or high temperature regions. More specifically, at low temperature

regions abnormalities in the non-aqueous electrolyte secondary battery are difficult to detect, while at high temperature regions the non-aqueous electrolyte secondary battery may be damaged. Screening the non-aqueous electrolyte secondary battery as the heating temperature of the non-aqueous electrolyte secondary battery rises allows for accurate detection of abnormalities without damaging the non-aqueous electrolyte secondary battery.

Traversal of Prior Art Rejections

Claims 1-11 were rejected under 35 U.S.C. §102(e) as being anticipated by Mori, Watanabe '062, or Watanabe '221. Applicants respectfully traverse this rejection and submit that amended claims 1-11 recite subject matter which is not identically disclosed or described in Mori, Watanabe '062, or Watanabe '221.

Amended independent claim 1 is directed to a method of producing a non-aqueous electrolyte secondary battery and requires the steps of assembling and sealing together a positive electrode, a negative electrode, an electrolytic solution containing a non-aqueous solvent and a supporting salt, a separator and a gasket to form a non-aqueous electrolyte secondary battery, heating the non-aqueous electrolyte secondary battery, and screening the non-aqueous electrolyte secondary battery for abnormalities as the heating

temperature of the non-aqueous electrolyte secondary battery rises during the heating step. No corresponding combination of steps is disclosed or suggested by the prior art of record.

Amended independent claim 4 is directed to a method of mounting a non-aqueous electrolyte secondary battery on a circuit substrate and requires the steps of assembling and sealing together a positive electrode, a negative electrode, a non-aqueous solvent, an electrolytic solution, a separator and a gasket to form a non-aqueous electrolyte secondary battery, heating the non-aqueous electrolyte secondary battery, screening the non-aqueous electrolyte secondary battery for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises during the heating step, and mounting the non-aqueous electrolyte secondary battery on a circuit substrate by reflow soldering. Again, no corresponding combination of steps is disclosed or suggested by the prior art of record.

Mori discloses a method in which batteries are caused to pass a high frequency heating reflow furnace to perform a reflow furnace passage resistance test. Likewise, each of Watanabe '062 and Watanabe '221 discloses a method in which batteries are subjected to a heat resistance test. However, neither Mori, Watanabe '062, nor Watanabe '221 discloses or suggests the combined steps of heating the non-aqueous electrolyte secondary battery and screening the non-

aqueous electrolyte secondary battery for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises during the heating step, as recited in amended independent claims 1 and 4. More specifically, in Mori measured resistance values of the batteries obtained before and after passing of the batteries through the high frequency heating reflow furnace are compared to examine the degree of deterioration of the batteries. Stated otherwise, the examination of the batteries in Mori to detect any deterioration is conducted after the batteries are passed through the high heating reflow furnace and the corresponding resistance values are measured. In contrast, claims 1 and 4 recite that the non-aqueous electrolyte secondary battery is screened for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises during the heating step. Likewise, while each of Watanabe '062 and '221 discloses a heat resistance test applied to a non-aqueous electrolyte secondary battery, such heat resistance test does not include the step of screening the non-aqueous electrolyte secondary battery for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises during the heating step, as recited in amended independent claims 1 and 4.

In the absence of the foregoing disclosure recited in amended independent claims 1 and 4, anticipation cannot be

found. See, e.g., W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) ("Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration"); Continental Can Co. USA v. Monsanto Co., 20 USPQ2d 1746, 1748 (Fed. Cir. 1991) ("When more than one reference is required to establish unpatentability of the claimed invention anticipation under § 102 can not be found."); Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added) ("Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim").

Stated otherwise, there must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. This standard is clearly not satisfied by Mori, Watanabe '062 and Watanabe '221 for the reasons stated above. Furthermore, Mori, Watanabe '062 and Watanabe '221 do not suggest the claimed subject matter and, therefore, would not have motivated one skilled in the art to modify the method disclosed by Mori, Watanabe '062 and Watanabe '221 to arrive at the claimed invention.

Claims 2-3 and 5-11 depend on and contain all of the limitations of amended independent claims 1 and 4,

respectively, and, therefore, distinguish from the references at least in the same manner as claims 1 and 4.

In view of the foregoing, applicants respectfully request that the rejection of claims 1-11 under 35 U.S.C. §102(e) as being anticipated by Mori, Watanabe '062 or Watanabe '221 be withdrawn.

Applicants respectfully submit that new claims 33-40 also patentably distinguish from the prior art of record.

Claims 33 and 34 depend on and contain all of the limitations of amended claims 1 and 4, respectively, and, therefore, distinguish from the references at least in the same manner as claims 1 and 4.

New independent claim 35 is directed to a method of fabricating a non-aqueous electrolyte secondary battery and requires the steps of assembling and sealing together a positive electrode, a negative electrode, an electrolytic solution containing a non-aqueous solvent and a supporting salt, a separator and a gasket to form a non-aqueous electrolyte secondary battery, heating the non-aqueous electrolyte secondary battery using a preselected temperature-time profile so that the non-aqueous electrolyte secondary battery is resistant to the reflow temperature during reflow soldering, and screening the non-aqueous electrolyte secondary battery for abnormalities as the heating temperature of the

non-aqueous electrolyte secondary battery rises during the heating step. No corresponding combination of steps is disclosed or suggested by the prior art of record as set forth above for amended independent claims 1 and 4.

Claims 36-40 depend on and contain all of the limitations of independent claim 35 and, therefore, distinguish from the references at least in the same manner as claim 35.



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In view of the foregoing amendments and discussion,
the application is now believed to be in condition for
allowance. Accordingly, favorable reconsideration and
allowance of the claims are most respectfully requested.

Respectfully submitted,
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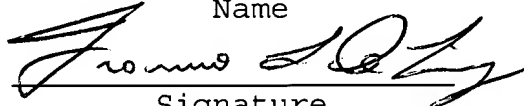
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January 6, 2004

Date

ABSTRACT OF THE DISCLOSURE

In a method of producing a non-aqueous electrolyte secondary battery, a positive electrode, a negative electrode, an electrolytic solution containing a non-aqueous solvent and a supporting salt, a separator and a gasket are assembled and sealed together to form a non-aqueous electrolyte secondary battery. The non-aqueous electrolyte secondary battery is then heated and screened for abnormalities as the heating temperature of the non-aqueous electrolyte secondary battery rises.